SLOVENSKI STANDARD
SIST EN 50090-1:2011

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SIST EN 50090-2-1:1997

Elektronski sistemi za stanovanja in zgradbe (HBES) - 1. del: Struktura standarda

Home and Building Electronic Systems (HBES) - Part 1: Standardization structure

Elektrische Systemtechnik für Heim und Gebäude (ESHG) - Teil 1: Aufbau der Norm

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Systèmes électroniques pour les foyers domestiques et les bâtiments (HBES) - Partie 1: Structure de la norme

Ta slovenski standard je istoveten z: **EN 50090-1:2011**

ICS:

97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

SIST EN 50090-1:2011 **en,de**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50090-1

February 2011

ICS 97.120   Supersedes EN 50090-2-1:1994

English version

Home and Building Electronic Systems (HBES) - Part 1: Standardization structure

Systèmes électroniques pour les foyers
domestiques et les bâtiments (HBES) -
Partie 1: Structure de la norme

Elektrische Systemtechnik für Heim und
Gebäude (ESHG) -
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This European Standard was approved by CENELEC on 2011-02-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 205, Home and Building Electronic Systems, joined by the co-operating partner Konnex Association.

The text of the draft was submitted to the Unique Acceptance Procedure and was accepted by CENELEC as EN 50090-1 on 2011-02-21.

This document supersedes EN 50090-2-1:1994.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

–   latest date by which the EN has to be implemented
    at national level by publication of an identical
    national standard or by endorsement   (dop)   2012-02-21

–   latest date by which the national standards conflicting
    with the EN have to be withdrawn   (dow)   2014-02-21

EN 50090-1 is part of the EN 50090 series "Home and Building Electronic Systems (HBES)", which will comprise the following parts (see Clause 2 for further details):

Part 1:   Standardization structure;

Part 2:   Void;

NOTE   EN 50090-2-1:1994 is incorporated and superseded by this Part 1.

EN 50090-2-2:1996 and its amendments are incorporated and superseded by EN 50491-3:2009, EN 50491-5-1:2010, EN 50491-5-2:2010 and EN 50491-5-3:2010.

EN 50090-2-3:2005 will be incorporated and superseded by the EN 50491 series.

Part 3:   Aspects of application;

Part 4:   Transport layer and network layer;

Part 5:   Media and media dependent layers;

Part 6:   Interfaces;

Part 7:   Management;

Part 8:   Conformity assessment of products;

Part 9:   Installation requirements.

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Introduction

This European Standard outlines the main elements of the HBES Open Communication System and the concept behind it. It should be used as a guideline for the EN 50090 series.

Home and Building Electronic Systems as provided by the HBES Open Communication System are a specialized form of automated, decentralised and distributed process control, dedicated to the needs of home and building applications.

The specification of the HBES Open Communication System provides, besides runtime characteristics, a "toolkit" of services and mechanisms for network management.

On the HBES Open Communication System Device Network, all devices form distributed applications, which are able to interact with one another taking into account Interworking rules (standardized Datapoint Types and "Functional Block" objects, modelling logical device channels). This run-time Interworking allows the creation of a comprehensive and multi-domain home and building communication system

The available communication media range from Twisted Pair to Powerline and 868 MHz band Radio Frequency.

The HBES Open Communication system is independent of any specific microprocessor platform or architecture. Depending on the profile chosen by the manufacturer, any suitable industry-standard chip can be chosen. Some HBES Open Communication System profiles allow a tiny system footprint (say < 5 kbit) and can run on an 8-bit processor. Implementations can however also be realised on 16- or 32-bit processors, or even PC's.

The features of HBES Open Communication System allow its use in different application domains and installation types, and also in "Service Network" environments (usually based on broadband networks running IP, the Internet Protocol). To address this need, the transmission of HBES Open Communication System frames across an IP network has been standardised in EN 50090-4-3:2007.

1 Scope

This European Standard concentrates on control applications for Home and Building HBES Open Communication System and covers any combination of electronic devices linked via a digital transmission network. Home and Building Electronic System as provided by the HBES Open Communication System is a specialized form of automated, decentralised and distributed process control, dedicated to the needs of home and building applications.

The EN 50090 series concentrates on HBES Open Communication System Class 1 and includes a specification for a communication network for Home and Building for example for the control of lighting, heating, food preparation, washing, energy management, water control, fire alarms, blinds control, different forms of security control, etc.

This European Standard gives an overview of the features of the HBES Open Communication System and provides the reader with references to the different parts of EN 50090 series.

This European Standard is used as a product family standard. It is not intended to be used as a stand-alone standard.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50090-3-1	1994	Home and Building Electronic Systems (HBES) – Part 3-1: Aspects of application – Introduction to the application structure
EN 50090-3-2	2004	Home and Building Electronic Systems (HBES) – Part 3-2: Aspects of application – User process for HBES Class 1
EN 50090-3-3	2009	Home and Building Electronic Systems (HBES) – Part 3-3: Aspects of application – HBES Interworking model and common HBES data types
EN 50090-4-1	2004	Home and Building Electronic Systems (HBES) – Part 4-1: Media independent layers – Application layer for HBES Class 1
EN 50090-4-2	2004	Home and Building Electronic Systems (HBES) – Part 4-2: Media independent layers – Transport layer, network layer and general parts of data link layer for HBES Class 1
EN 50090-4-3	2007	Home and Building Electronic Systems (HBES) – Part 4-3: Media independent layers – Communication over IP (EN 13321-2:2006)
EN 50090-5-1	2005	Home and Building Electronic Systems (HBES) – Part 5-1: Media and media dependent layers – Power line for HBES Class 1
EN 50090-5-2	2004	Home and Building Electronic Systems (HBES) – Part 5-2: Media and media dependent layers – Network based on HBES Class 1, Twisted Pair
EN 50090-5-3	2006	Home and Building Electronic Systems (HBES) – Part 5-3: Media and media dependent layers – Radio frequency
EN 50090-7-1	2004	Home and Building Electronic Systems (HBES) – Part 7-1: System management – Management procedures
EN 50090-8	2000	Home and Building Electronic Systems (HBES) – Part 8: Conformity assessment of products

EN 50090-9-1	2004	Home and Building Electronic Systems (HBES) – Part 9-1: Installation requirements – Generic cabling for HBES Class 1 Twisted Pair
CLC/TR 50090-9-2	2007	Home and Building Electronic Systems (HBES) – Part 9-2: Installation requirements – Inspection and testing of HBES installation
EN 50491-2	2010	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 2: Environmental conditions
EN 50491-3	2009	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 3: Electrical safety requirements
EN 50491-5-1	2010	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 5-1: EMC requirements, conditions and test set-up
EN 50491-5-2	2010	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 5-2: EMC requirements for HBES/BACS used in residential, commercial and light industry environment
EN 50491-5-3	2010	General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 5-3: EMC requirements for HBES/BACS used in industry environment
CLC/TR 50552	2010	Home and Building Electronic Systems (HBES) – Open communication system – Interfaces – Medium interface, twisted pair, class 1

3   Terms, definitions and abbreviations

3.1   Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
Home and Building Electronic Systems (HBES)
communication system on which elements or entities of several applications are distributed and logically linked together via one or more networks

3.1.2
HBES Open Communication System
HBES according to EN 50090 series

3.1.3
HBES Class 1
HBES with transport capabilities for applications such as:

– control;

– monitoring;

– measurement;

– alarm;

– low speed data transfer

3.2   Abbreviations

For the purposes of this document, the following abbreviations apply:

IP   Internet Protocol

TPCI   Transport Layer Protocol Control Information

APCI   Application Layer Protocol Control Information

LPDU   Link Layer Protocol Data Unit

4   General requirements

A product claiming compliance with EN 50090 shall comply with the full set of EN 50090 series, according to the selected media, and with the relevant parts of EN 50491 series listed under Clause 2.

5   Elements of the HBES Open Communication System Architecture

5.1   General

The HBES Open Communication System specification contains a number of mechanisms to bring the network into operation but leaves the possibility for the implementer to choose the most adapted configuration Figure 1 shows an overview of the HBES Open Communication System model.
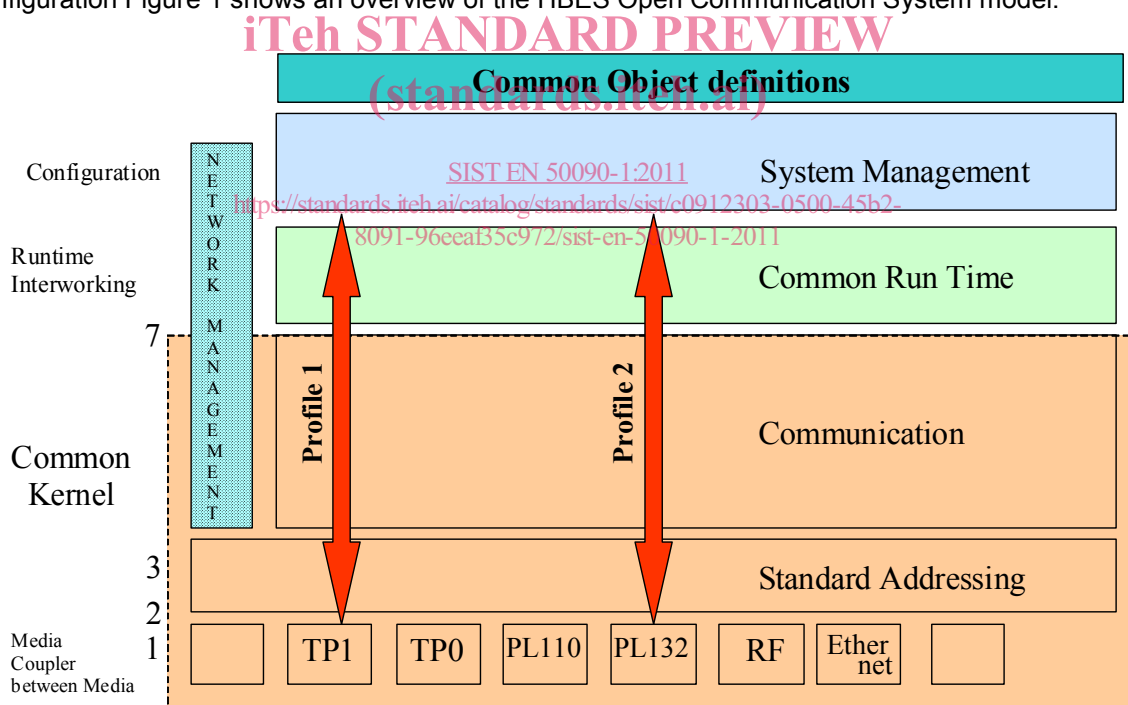
Figure 1 – The HBES Open Communication System Model

The following constitute the essential ingredients of the HBES Open Communication System:

- Interworking and (Distributed) Application Models for the various tasks of Home and Building Automation. These are described in EN 50090-3-2 and EN 50090-3-3 (Aspects of application – HBES Interworking model and common HBES data types).

- Schemes for Configuration and Management, to properly manage all resources on the network, and to permit the logical linking or binding of parts of a distributed application, which run in different devices. These are structured in a set of Management Procedures as described in EN 50090-7-1.

- Communication System, with a set of physical communication media, a message protocol and corresponding models for the communication stack in each node; this Communication System has to support all network communication requirements for the Configuration and Management of an installation, as well as to host Distributed Applications on it. This is typified by the HBES Open Communication System Common Kernel. These are described in EN 50090-5 series (for the different supported media) and in EN 50090-4 series (for the media independent layers).

- Concrete Device Models, summarized in Profiles for the effective realization and combination of the elements above when developing actual products or devices, which will be mounted and linked in an installation. These are described in EN 50090-9-1, CLC/TR 50090-9-2 and CLC/TR 50552.

A more detailed description of the above-mentioned elements is given below.

5.2   Applications, Interworking and Binding

Central to HBES Open Communication System application concepts is the idea of Datapoints: they represent the process and control variables in the system, as explained in EN 50090-3 series. These Datapoints may be inputs, outputs, parameters, diagnostic data etc. The standardized containers for these Datapoints are Group Objects and Interface Object Properties.

The Communication System and Protocol are expected to offer a reduced instruction set to read and write (set and get) Datapoint values: any further application semantics is mapped to the data format and the bindings, making the HBES Open Communication System primarily "data driven".

In order to achieve Interworking, the Datapoints have to implement Standardized Datapoint Types, themselves grouped into Functional Blocks. These Functional Blocks and Datapoint Types are related to applications fields, but some of them are of general use and named functions of common interest (such as date and time).

Datapoints may be accessed through unicast or multicast mechanisms.

Clause 8 zooms in on these aspects.

5.3   Configuration

There are two levels at which an installation has to be configured. First of all, there is the level of the network topology and the individual nodes or devices.

In a way, this first level is a precondition, prior to the configuration of the Distributed Applications, i.e. binding and parameter setting.

Configuration may be achieved through a combination of local manipulations on the devices (e.g. pushing a button, setting a code wheel, or using a locally connected configuration tool), and active Network Management communication over the bus (peer-to-peer as well as more centralized master-slave schemes).

5.4   Network Management and Resources

To accommodate all active configuration needs of the system, HBES Open Communication System is equipped with a toolkit for network management. These instruments can be used throughout the lifecycle of an installation: for initial set-up, for integration of multi-mode installations, for subsequent diagnostics and maintenance, as well as for later extension and reconfiguration.

Network Management in the HBES Open Communication System specifies a set of mechanisms to discover, set or retrieve configuration data actively via the network. It proposes Procedures (i.e. message sequences) to access values of the different network resources within the devices, as well as identifiers and formats for these resources – all of this in order to enable a proper Interworking of all